

## MATERIAL SAFETY DATA SHEET

<b>Product</b>	
<b>Item #</b>	<b>Title</b>
HF-RB-MG-Units	Integrity High Fidelity Polymerase with 10X Reaction Buffer
<b>Components</b>	
HF-Units-PC	Integrity High Fidelity Polymerase
HF-RB-Volume-PC	10X Integrity Reaction Buffer
MgSO4-100-Volume-PC	100mM Magnesium Sulfate

## MATERIAL SAFETY DATA SHEET

**Product Title: Integrity High Fidelity Polymerase**

## SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Title:** Integrity High Fidelity Polymerase  
**Item number:** HF-Units-PC  
**Document Number:** PC-MSDS-026 Version 001  
**Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available  
**Application of the substance / the mixture** Laboratory Chemicals  
**Details of the supplier of the safety data sheet**  
Manufacturer/Supplier:  
Empirical Bioscience  
2007 Eastcastle Dr. SE  
Grand Rapids, MI 49508 U.S.A.  
1-877.479.9949  
MSDS author; customer.service@empiricalbioscience.com

## SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients ( <i>specific</i> )	%	CAS Number
Glycerol	50	56-81-5

## SECTION 3 — HAZARDS IDENTIFICATION

**Classification of the substance or mixture**  
**Classification according to the Hazard Communication Standard (HCS).**  
The product is not classified as hazardous according to the HCS regulation.  
**Labelling according to Regulation (EC) No 1272/2008** Void  
**Hazard pictograms** Void  
**Signal word** Void  
**Hazard statements** Void  
**Classification system:**  
**NFPA ratings (scale 0 - 4)**  
Health = 0  
Fire = 1  
Reactivity = 0  
**HMIS-ratings (scale 0 - 4)**  
Health = 0  
Fire = 1  
Reactivity = 0  
**OSHA Hazard Overview (Criteria according to 29CFR1910.1200):** Not applicable  
**Target Organ(s):** May affect Kidneys  
**Other hazards:** This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.

## MATERIAL SAFETY DATA SHEET

**Product Title:** Integrity High Fidelity Polymerase

## SECTION 4 — FIRST AID MEASURES

**Description of first aid measures**

**General information:** No special measures required.

**After inhalation:** Supply fresh air; consult doctor in case of complaints.

**After skin contact:** Generally the product does not irritate the skin, but if irritation does occur wash the skin immediately with plenty of water for at least 15 minutes.

**After eye contact:** Rinse opened eye for at least 15 minutes under running water.

**After swallowing:** If symptoms persist consult doctor.

**Information for doctor:**

**Most important symptoms and effects, both acute and delayed** Ingestion may cause nausea, vomiting, diarrhea, and gastrointestinal irritation.

## SECTION 5 — FIRE FIGHTING MEASURES

**Extinguishing media**

**Suitable extinguishing agents:** CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture** None known

**Advice for firefighters** No special advice

**Protective equipment:** No special measures required.

## SECTION 6 — ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures** Not required.

**Environmental precautions:** Dilute with plenty of water. Do not allow to enter sewers/ surface or ground water.

**Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

**Reference to other sections** No dangerous substances are released.

See Section 7 for information on safe handling.

See Section 13 for disposal information.

## SECTION 7 — HANDLING AND STORAGE

**Handling:**

**Precautions for safe handling** No special measures required.

**Information about protection against explosions and fires:** The product is not flammable.

**Conditions for safe storage, including any incompatibilities**

**Storage:** Keep in properly labeled, closed containers.

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** None.

**Specific end use(s)** No further relevant information available.

## MATERIAL SAFETY DATA SHEET

**Product Title: Integrity High Fidelity Polymerase**

## SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

**Control parameters****Components with limit values that require monitoring at the workplace:****56-81-5 glycerol**PEL () Long-term value: 15\* 5\*\* mg/m<sup>3</sup>

\*total dust \*\*respirable fraction

TLV () TLV withdrawn-insufficient data human occup. exp

**Additional information:** The lists that were valid during the creation were used as basis.**Exposure controls****Personal protective equipment:****General protective and hygienic measures:** The usual precautionary measures for handling chemicals should be followed.**Breathing equipment:** Not required.**Protection of hands:** Protective gloves. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation**Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Eye protection:** Goggles recommended during refilling

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties****General Information Appearance:****Form:** Fluid **Color:**Colorless **Odor:**

Characteristic

**Odour threshold:** Not determined.**pH-value at 20 °C (68 °F):** 7.4**Change in condition****Melting point/Melting range:** Undetermined.**Boiling point/Boiling range:** 100 °C (212 °F)**Flash point:** Not applicable.**Flammability (solid, gaseous):** Not applicable.**Ignition temperature:** 400 °C (752 °F)**Decomposition temperature:** Not determined.**Auto igniting:** Product is not self-igniting.**Danger of explosion:** Product does not present an explosion hazard.**Explosion limits:****Lower:** 0.9 Vol%**Upper:** Not Determined**Vapor pressure at 20 °C (68 °F):** 0.1 hPa**Density at 20 °C (68 °F):** 1.152 g/cm<sup>3</sup> (9.613 lbs/gal)**Relative density** Not determined.**Vapour density** Not determined.**Evaporation rate** Not determined.**Solubility in / Miscibility with Water:** Fully miscible.**Partition coefficient (n-octanol/water):** Not determined.**Viscosity:****Dynamic:** Not determined.**Kinematic:** Not determined.**Solvent content:****Organic Solvents:** 50%**Water:** 48.1%**Solids content:** 1.4%

## MATERIAL SAFETY DATA SHEET

**Product Title: Integrity High Fidelity Polymerase**

## SECTION 10 — STABILITY AND REACTIVITY

**Reactivity****Chemical stability**

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known.

**Conditions to avoid** No further relevant information available.

**Incompatible materials:** No further relevant information available.

**Hazardous decomposition products:** No dangerous decomposition products known

## SECTION 11 — TOXICOLOGICAL INFORMATION

**Information on toxicological effects****Acute toxicity:**

**LD/LC50 values that are relevant for classification:** No data available

**Primary irritant effect:**

**On the skin:** No irritant effect.

**On the eye:** Irritating effect.

**Sensitization:** No sensitizing effects known.

**Additional toxicological information:** The product is not subject to classification according to internally approved calculation methods for preparations:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

**Carcinogenic categories**

**IARC (International Agency for Research on Cancer):** None of the ingredients are listed.

**NTP (National Toxicology Program):** None of the ingredients are listed

## SECTION 12 — ECOLOGICAL INFORMATION

**Toxicity**

**Aquatic toxicity:** Not harmful to the aquatic environment

**Persistence and degradability** Not available

**Behavior in environmental systems:**

**Bioaccumulative potential** Not known

**Mobility in soil** No further relevant information available.

**Ecotoxicological effects:**

**Remark:** Not available

**Additional ecological information:**

**General notes:** Water hazard class 1 (Self-assessment): slightly hazardous for water Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects** No further relevant information available.

## MATERIAL SAFETY DATA SHEET

**Product Title: Integrity High Fidelity Polymerase**

## SECTION 13 — DISPOSAL CONSIDERATIONS

**Waste treatment methods****Recommendation:**

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## SECTION 14 — TRANSPORT INFORMATION

**UN-Number** None

**DOT, ADR, ADN, IMDG, IATA** Void

**UN proper shipping name** None

**DOT, ADR, ADN, IMDG, IATA** Void

**Transport hazard class(es)** None

**DOT, ADR, ADN, IMDG, IATA Class** Void

**Packing group** None

**DOT, ADR, IMDG, IATA** Void

**Environmental hazards:**

**Marine pollutant:** No

**Special precautions for user** Not applicable

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC code** Not applicable

**UN "Model Regulation":** -

## SECTION 15 — REGULATORY INFORMATION

**Safety, health and environmental regulations/legislation specific for the substance or mixture** Sara

**Section 355 (extremely hazardous substances):** None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):** None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):** All ingredients are listed.

Proposition 65

**Chemicals known to cause cancer:** None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:** None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:** None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:** None of the ingredients are listed.

**Carcinogen categories**

**EPA (Environmental Protection Agency)** None of the ingredients are listed.

**TLV (Threshold Limit Value established by ACGIH)** None of the ingredients are listed.

**MAK (German Maximum Workplace Concentration)** None of the ingredients are listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)** None of the ingredients are listed.

**OSHA-Ca (Occupational Safety & Health Administration)** None of the ingredients are listed.

**National regulations:**

**Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## MATERIAL SAFETY DATA SHEET

**Product Title: Integrity High Fidelity Polymerase**

## SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing MSDS

Empirical Bioscience

2007 Eastcastle Dr. SE

Grand Rapids, MI 49508 U.S.A.

1-877.479.9949

**Abbreviations and acronyms:**

**ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

**IMDG:** International Maritime Code for Dangerous Goods

**DOT:** US Department of Transportation

**IATA:** International Air Transport Association

**CAS:** Chemical Abstracts Service (division of the American Chemical Society)

**NFPA:** National Fire Protection Association (USA)

**HMIS:** Hazardous Materials Identification System (USA)

**LC50:** Lethal concentration, 50 percent

**LD50:** Lethal dose, 50

\* **Data compared to the previous version altered.**

## MATERIAL SAFETY DATA SHEET

**Product Title:** 10X Integrity Reaction Buffer

## SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Title:** 10X Integrity Reaction Buffer

**Item number:** HF-RB-Volume-PC

**Document Number:** PC-MSDS-027 Version 001

**Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.

**Application of the substance / the mixture** Laboratory Chemicals

**Details of the supplier of the safety data sheet**

Manufacturer/Supplier:

Empirical Bioscience

2007 Eastcastle Dr. SE

Grand Rapids, MI 49508 U.S.A.

1-877.479.9949

MSDS author; customer.service@empiricalbioscience.com

## SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

<b>Hazardous Ingredients (specific)</b>	<b>%</b>	<b>CAS Number</b>
1. Ammonium Sulfate	2	7783-20-2

## SECTION 3 — HAZARDS IDENTIFICATION

**Classification of the substance or mixture**

**Classification according to the Hazard Communication Standard (HCS).**

The product is not classified as hazardous according to the HCS regulation.

**Labelling according to Regulation (EC) No 1272/2008** Void

**Hazard pictograms** Void **Signal word** Void

**Hazard statements** Void

**Classification system: NFPA ratings (scale 0 - 4)**

**Health = 0**

**Fire = 0**

**Reactivity = 0**

**HMS-ratings (scale 0 - 4)**

**Health = 0**

**Fire = 0**

**Reactivity = 0**

**OSHA Hazard Overview (Criteria according to 29CFR1910.1200):** Not applicable

**Target Organ(s):** Kidneys, eyes, skin, respiratory system.

**Other hazards** Approximately 9% of the mixture consists of ingredients with unknown toxicity. This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

## MATERIAL SAFETY DATA SHEET

**Product Title:** 10X Integrity Reaction Buffer

## SECTION 4 — FIRST AID MEASURES

**Description of first aid measures**

**General information:** If irritation occurs seek medical advice immediately. Do not breathe dust, fume, gas, or mist.

**After inhalation:** Supply fresh air; consult doctor in case of complaints.

**After skin contact:** Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes.

**After eye contact:** Rinse opened eye for several minutes under running water.

**After swallowing:** Rinse mouth with plenty of water. If symptoms persist consult doctor.

**Information for doctor:**

**Most important symptoms and effects, both acute and delayed** None

**Indication of any immediate medical attention and special treatment needed**

No further relevant information available

## SECTION 5 — FIRE FIGHTING MEASURES

**Extinguishing media**

**Suitable extinguishing agents:** CO<sub>2</sub>, extinguishing powder, or water spray. Fight larger fires with alcohol resistant foam. Water spray may be inefficient.

**Special hazards arising from the substance or mixture** No information available

**Advice for firefighters** No special advice

**Protective equipment:**

No special measures required other than those generally recommended.

## SECTION 6 — ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures** Avoid breathing or contact with vapors, mist or gas.

**Environmental precautions:** Dilute with plenty of water.

Do not allow to enter sewers/ surface or ground water.

**Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust) and place in properly labeled containers and dispose of as hazardous waste.

**Reference to other sections** No dangerous substances are released.

See Section 7 for information on safe handling.

See Section 13 for disposal information.

## SECTION 7 — HANDLING AND STORAGE

**Handling:**

**Precautions for safe handling** No special measures required.

**Information about protection against explosions and fires:** The product is not flammable.

**Conditions for safe storage, including any incompatibilities**

**Storage:** Store in original container.

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** None.

**Specific end use(s)** No further relevant information available.

## MATERIAL SAFETY DATA SHEET

**Product Title:** 10X Integrity Reaction Buffer

## SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

**Control parameters**

**Components with limit values that require monitoring at the workplace:** Not Applicable

**Additional information:**

**Exposure controls**

**Personal protective equipment:** General protective and hygienic measures: The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Not required.

**Protection of hands:**

**Protective gloves** Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

**Material of gloves** The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Eye protection:** Goggles recommended during refilling.

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties****General Information****Appearance:**

**Form:** Fluid

**Color:** Colorless

**Odor:** Characteristic

**Odour threshold:** Not Determined

**pH-value at 20 °C (68 °F):** Not determined

**Change in condition**

**Melting point/Melting range:** Undetermined

**Boiling point/Boiling range:** Undetermined

**Flash point:** Not applicable

**Flammability (solid, gaseous):** Not applicable

**Ignition temperature:**

**Decomposition temperature:** Not determined

**Auto igniting:** Product is not self-igniting

**Danger of explosion:** Product does not present an explosion hazard

**Explosion limits:**

**Lower:** Not determined

**Upper:** Not determined

**Vapor pressure at 20 °C (68 °F):** Not determined

**Density at 20 °C (68 °F):** Not determined

**Relative density:** Not determined

**Vapour density:** Not determined

**Evaporation rate:** Not determined

**Solubility in / Miscibility with Water:** Fully miscible

**Partition coefficient (n-octanol/water):** Not determined

**Viscosity:**

**Dynamic:** Not determined

**Kinematic:** Not determined

**Solvent content:**

**Organic Solvents:** 0.0%

**Water:** Not determined

**Solids content:** Not determined

**Other information:** No further relevant information available.

## MATERIAL SAFETY DATA SHEET

**Product Title:** 10X Integrity Reaction Buffer

## SECTION 10 — STABILITY AND REACTIVITY

**Reactivity****Chemical stability**

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Possibility of hazardous reactions** Can react briskly with oxidizers resulting in a danger or explosion.

**Conditions to avoid** Incompatible materials, heat and ignition sources.

**Incompatible materials:** No further relevant information available.

**Hazardous decomposition products:** Carbon dioxide (CO<sub>2</sub>). Thermal decomposition can cause toxic gas and vapor to be released.

## SECTION 11 — TOXICOLOGICAL INFORMATION

**Information on toxicological effects****Acute toxicity:**

**LD/LC50 values that are relevant for classification:** No data available

**Primary irritant effect:**

**on the skin:** May cause irritating effect . Repeated exposure could cause skin dryness and cracking.

**on the eye:** May cause irritating effect

**Sensitization:** No information available.

**Additional toxicological information:** Ingestion may cause drowsiness, dizziness, burns to the upper lip and diegestive and respiratory tracts. When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

**Carcinogenic categories IARC (International Agency for Research on Cancer)**

None of the ingredients are listed

**NTP (National Toxicology Program)**

None of the ingredients are listed.

## SECTION 12 — ECOLOGICAL INFORMATION

**Toxicity**

**Aquatic toxicity:** Not Determined

**Persistence and degradability** Not available

**Behavior in environmental systems:**

**Bioaccumulative potential** Not known

**Mobility in soil** No further relevant information available.

**Ecotoxic effects: Remark:** Not available

**Additional ecological information:****General notes:****Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects** No further relevant information available.

## MATERIAL SAFETY DATA SHEET

**Product Title:** 10X Integrity Reaction Buffer

## SECTION 13 — DISPOSAL CONSIDERATIONS

**Waste treatment methods**

Recommendation: Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations. Empty containers must be triple rinsed before disposal.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## SECTION 14 — TRANSPORT INFORMATION

**UN-Number** None

**DOT, ADR, ADN, IMDG, IATA** Void

**UN proper shipping name** None

**DOT, ADR, ADN, IMDG, IATA** Void

**Transport hazard class(es)** None

**DOT, ADR, ADN, IMDG, IATA Class** Void

**Packing group** None

**DOT, ADR, IMDG, IATA** Void

**Environmental hazards:**

**Marine pollutant:** No

**Special precautions for user** Not applicable

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC code** Not applicable

**UN "Model Regulation":** -

## SECTION 15 — REGULATORY INFORMATION

**Safety, health and environmental regulations/legislation specific for the substance or mixture** Sara

**Section 355 (extremely hazardous substances):** None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):** None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):** All of the ingredients are listed.

Proposition 65

**Chemicals known to cause cancer:** None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:** None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:** None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:** None of the ingredients are listed.

**Carcinogen categories**

**EPA (Environmental Protection Agency)** None of the ingredients are listed.

**TLV (Threshold Limit Value established by ACGIH)** None of the ingredients are listed.

**MAK (German Maximum Workplace Concentration)** None of the ingredients are listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)** None of the ingredients are listed.

**OSHA-Ca (Occupational Safety & Health Administration)** None of the ingredients are listed.

**National regulations:**

**Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## MATERIAL SAFETY DATA SHEET

**Product Title: 10X Integrity Reaction Buffer**

## SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing MSDS

Empirical Bioscience

2007 Eastcastle Dr. SE

Grand Rapids, MI 49508 U.S.A.

1-877.479.9949

**Abbreviations and acronyms:**

**ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

**IMDG:** International Maritime Code for Dangerous Goods

**DOT:** US Department of Transportation

**IATA:** International Air Transport Association

**CAS:** Chemical Abstracts Service (division of the American Chemical Society)

**NFPA:** National Fire Protection Association (USA)

**HMIS:** Hazardous Materials Identification System (USA)

**LC50:** Lethal concentration, 50 percent

**LD50:** Lethal dose, 50

\* **Data compared to the previous version altered.**

## MATERIAL SAFETY DATA SHEET

**Product Title: 100mM Magnesium Sulfate**

## SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Title:** 100mM Magnesium Sulfate  
**Item number:** MgSO<sub>4</sub>-100-Volume-PC  
**Document Number:** PC-MSDS-028 Version 001  
**Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.  
**Application of the substance / the mixture** Laboratory Chemicals  
**Details of the supplier of the safety data sheet**  
Manufacturer/Supplier:  
Empirical Bioscience  
2007 Eastcastle Dr. SE  
Grand Rapids, MI 49508 U.S.A.  
1-877.479.9949  
MSDS author; customer.service@empiricalbioscience.com

## SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients ( <i>specific</i> )	%	CAS Number
Void		

## SECTION 3 — HAZARDS IDENTIFICATION

**Classification of the substance or mixture** Classification according to the Hazard Communication Standard (HCS).  
**The product is not classified as hazardous according to the HCS regulation.**  
**Labelling according to Regulation (EC) No 1272/2008** Void  
**Hazard pictograms** Void **Signal word** Void  
**Hazard statements** Void  
**Classification system: NFPA ratings (scale 0 - 4)**  
Health = 0  
Fire = 0  
Reactivity = 0  
**HMIS-ratings (scale 0 - 4)**  
Health = 0  
Fire = 0  
Reactivity = 0  
**OSHA Hazard Overview (Criteria according to 29CFR1910.1200):** Delayed target organ effects  
**Target Organ(s):** Central Nervous system, gastrointestinal tract  
**Other hazards** This mixture has not been tested to determine the overall health hazard; therefore in accordance with 29CFR1910.1200, the data reported above pertains to the hazardous ingredients of this mixture.  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable

## MATERIAL SAFETY DATA SHEET

**Product Title: 100mM Magnesium Sulfate**

## SECTION 4 — FIRST AID MEASURES

**Description of first aid measures**

**General information:** No special measures required.

**After inhalation:** Supply fresh air; If breathing stops, give artificial respiration. Consult doctor in case of complaints.

**After skin contact:** Immediately wash the skin with soap and plenty of water. Wash clothing that has been contaminated before reuse.

**After eye contact:** Rinse opened eye for at least 15 minutes by opening the eyelids with fingers and flushing the eyes. Consult a doctor.

**After swallowing:** Wash mouth with water. If symptoms persist consult doctor.

**Information for doctor:**

**Most important symptoms and effects, both acute and delayed** None

**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

## SECTION 5 — FIRE FIGHTING MEASURES

**Extinguishing media**

**Suitable extinguishing agents:** CO<sub>2</sub>, extinguishing powder, appropriate foam or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture** None known

**Advice for firefighters:** Wear self-contained breathing apparatus and appropriate protective clothing to protect skin and eyes

**Protective equipment:** No special measures required.

## SECTION 6 — ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures** Avoid formation of dust.

**Environmental precautions:** Do not allow the product to enter drains.

**Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Keep in closed containers for disposal.

**Reference to other sections**

See Section 7 for information on safe handling.

See Section 13 for disposal information

## SECTION 7 — HANDLING AND STORAGE

**Handling:**

**Precautions for safe handling** Provide exhaust ventilation where dust formation occurs.

**Information about protection against explosions and fires:** The product is not flammable.

**Conditions for safe storage, including any incompatibilities**

**Storage:** Keep container in a dry, well ventilated place in a closed container.

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** None.

**Specific end use(s)** No further relevant information available.

## MATERIAL SAFETY DATA SHEET

**Product Title: 100mM Magnesium Sulfate**

## SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

**Control parameters**

**Components with limit values that require monitoring at the workplace:** The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** The lists that were valid during the creation were used as basis.

**Exposure controls****Personal protective equipment:**

**General protective and hygienic measures:** The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Not required unless high levels of dusts are present, in that case use type N95(US) or type P1 (EN 143) dust masks.

**Protection of hands:** Protective gloves. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

**Material of gloves** The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Eye protection:** Goggles recommended.

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties****General Information****Appearance:**

**Form:** Fluid

**Color:** Colorless

**Odor:** Characteristic

**Odour threshold:** Not Determined

**pH-value at 20 °C (68 °F):** 6.14

**Change in condition**

**Melting point/Melting range:** Undetermined

**Boiling point/Boiling range:** No information available

**Flash point:** Not applicable

**Flammability (solid, gaseous):** Not applicable

**Ignition temperature:**

**Decomposition temperature:** Not determined

**Auto igniting:** Not determined

**Danger of explosion:** Product does not present an explosion hazard

**Explosion limits:**

**Lower:** Not determined

**Upper:** Not determined

**Vapor pressure at 20 °C (68 °F):** <0.1 hPA (<0.1 mmHg)

**Density at 20 °C (68 °F):** 1.070 g/cm<sup>3</sup>

**Relative density:** Not determined

**Vapour density:** Not determined

**Evaporation rate:** Not determined

**Solubility in / Miscibility with Water:** Not determined

**Partition coefficient (n-octanol/water):** Not determined

**Viscosity:**

**Dynamic:** Not determined

**Kinematic:** Not determined

**Solvent content:**

**Organic Solvents:** 0.0%

**Water:** Not determined

**Solids content:** Not determined

**Other information** No further relevant information available.

## MATERIAL SAFETY DATA SHEET

**Product Title: 100mM Magnesium Sulfate**

## SECTION 10 — STABILITY AND REACTIVITY

**Reactivity**

**Chemical stability:** Stable

**Thermal decomposition / conditions to be avoided:** No further relevant information available.

**Possibility of hazardous reactions** Can react with oxidizers resulting in a danger of explosion.

**Conditions to avoid:** Strong oxidizing agents.

**Incompatible materials:** No further relevant information available.

**Hazardous decomposition products:** Sulphur oxides, Magnesium oxide.

## SECTION 11 — TOXICOLOGICAL INFORMATION

**Information on toxicological effects****Acute toxicity:**

**LD/LC50 values that are relevant for classification:** No data available.

**Primary irritant effect:**

**on the skin:** May cause skin irritation if absorbed through the skin.

**on the eye:** Irritating effect.

**Sensitization:** No sensitizing effects known.

**Additional toxicological information:** The product is not subject to classification according to internally approved calculation methods for preparations:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

**Carcinogenic categories IARC (International Agency for Research on Cancer)**

None of the ingredients are listed

**NTP (National Toxicology Program)**

None of the ingredients are listed.

## SECTION 12 — ECOLOGICAL INFORMATION

**Toxicity**

**Aquatic toxicity:** Harmful to aquatic environment.

**Persistence and degradability** Not available

**Behavior in environmental systems:**

**Bioaccumulative potential** Not known

**Mobility in soil** No further relevant information available.

**Ecotoxicological effects:**

**Remark:** Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 2,820 mg/l – 96.

Toxicity to daphnia and other aquatic invertebrates. EC50 - Daphnia magna (Water flea) - 343.56 mg/l - 48 h.

**Additional ecological information:**

**General notes:** No further relevant information available.

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects** No further relevant information available.

## MATERIAL SAFETY DATA SHEET

**Product Title: 100mM Magnesium Sulfate**

## SECTION 13 — DISPOSAL CONSIDERATIONS

**Waste treatment methods**

Recommendation: Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## SECTION 14 — TRANSPORT INFORMATION

**UN-Number** None

**DOT, ADR, ADN, IMDG, IATA** Void

**UN proper shipping name** None

**DOT, ADR, ADN, IMDG, IATA** Void

**Transport hazard class(es)** None

**DOT, ADR, ADN, IMDG, IATA Class** Void

**Packing group** None

**DOT, ADR, IMDG, IATA** Void

**Environmental hazards:**

**Marine pollutant:** None

**Special precautions for user** This substance is considered non-hazardous for transport.

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC code** Not applicable

**UN "Model Regulation":** -

## SECTION 15 — REGULATORY INFORMATION

**Safety, health and environmental regulations/legislation specific for the substance or mixture** Sara

**Section 355 (extremely hazardous substances):** None of the ingredients are listed.

**Section 313 (Specific toxic chemical listings):** None of the ingredients are listed.

**TSCA (Toxic Substances Control Act):** All of the ingredients are listed.

Proposition 65

**Chemicals known to cause cancer:** None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for females:** None of the ingredients are listed.

**Chemicals known to cause reproductive toxicity for males:** None of the ingredients are listed.

**Chemicals known to cause developmental toxicity:** None of the ingredients are listed.

**Carcinogenicity categories**

**EPA (Environmental Protection Agency)** None of the ingredients are listed.

**TLV (Threshold Limit Value established by ACGIH)** None of the ingredients are listed.

**MAK (German Maximum Workplace Concentration)** None of the ingredients are listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)** None of the ingredients are listed.

**OSHA-Ca (Occupational Safety & Health Administration)** Delayed target organ effects.

**National regulations:**

**Water hazard class:** None of the chemicals are listed as Hazardous substances, priority pollutants, or toxic pollutants under the CWA.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## MATERIAL SAFETY DATA SHEET

**Product Title: 100mM Magnesium Sulfate**

## SECTION 16 — OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing MSDS

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**Abbreviations and acronyms:**

**ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

**IMDG:** International Maritime Code for Dangerous Goods

**DOT:** US Department of Transportation

**IATA:** International Air Transport Association

**CAS:** Chemical Abstracts Service (division of the American Chemical Society)

**NFPA:** National Fire Protection Association (USA)

**HMIS:** Hazardous Materials Identification System (USA)

**LC50:** Lethal concentration, 50 percent

**LD50:** Lethal dose, 50

\* **Data compared to the previous version altered.**